

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number
WO 2004/086771 A3

(51) International Patent Classification⁷: **H04N 13/04**

(21) International Application Number:
PCT/GB2004/001364

(22) International Filing Date: 29 March 2004 (29.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0307077.8 27 March 2003 (27.03.2003) GB

(71) Applicant (for all designated States except US): **UNIVERSITY OF STRATHCLYDE** [GB/GB]; McCance Building, 16 Richmond Street, Glasgow G1 1XQ (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MCKAY, Stuart** [GB/GB]; Department of DMEM, James Weir Building, University of Strathclyde, 75 Montrose Street, Glasgow G1 1XJ (GB). **MASON, Steven** [GB/GB]; Department of DMEM, James Weir Building, University of Strathclyde,

75 Montrose Street, Glasgow G1 1XJ (GB). **MAIR, Gordon** [GB/GB]; Department of DMEM, James Weir Building, University of Strathclyde, 75 Montrose Street, Glasgow G1 1XJ (GB). **HARRISON, Colin** [GB/GB]; Department of DMEM, James Weir Building, University of Strathclyde, 75 Montrose Street, Glasgow G1 1XJ (GB).

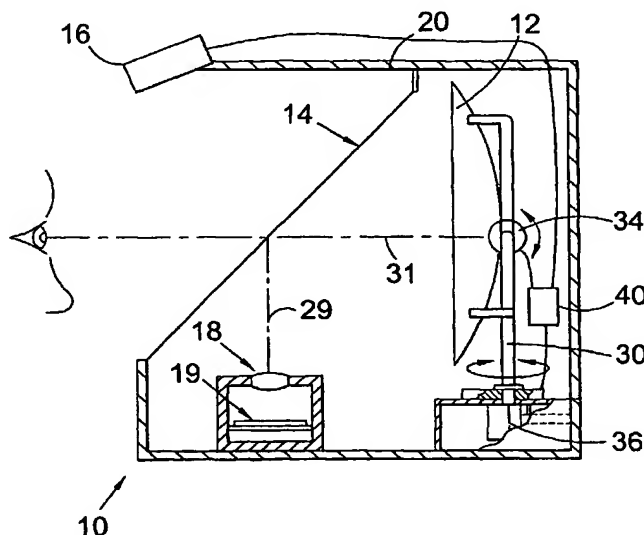
(74) Agents: **MACDOUGALL, Donald, Carmichael et al.**; Marks & Clerk, 19 Royal Exchange Square, Glasgow G1 3AE (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: A STEREOSCOPIC DISPLAY



(57) Abstract: A stereoscopic display (10) comprising a concave mirror (12) that acts as a directional screen, a projection system (18) including a plurality of reflecting surfaces for directing first and second images (19) onto focusing means, and a beam splitter (14) between the mirror (12) and the focusing means for directing light from the focusing means towards the mirror (12) whilst allowing light reflected from the mirror (12) to be transmitted therethrough. In a preferred embodiment, the focusing means comprise a single lens for focusing both of the first and second images toward the concave mirror. Ideally, a tracking system (16) is employed to detect movement of a user's head and/or eyes and move the concave mirror so that it tracks any such detected movement.

WO 2004/086771 A3



GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) **Date of publication of the international search report:**
20 January 2005

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2004/001364

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N13/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 799 763 A (THURSTON MARLIN O ET AL) 24 January 1989 (1989-01-24) cited in the application column 1, line 52 - column 2, line 6; figures 6,7	17
A		1,9
Y	US 2003/025996 A1 (MASON STEVEN ET AL) 6 February 2003 (2003-02-06) cited in the application paragraphs '0021!, '0022!	17
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 12, 3 January 2001 (2001-01-03) & JP 2000 249975 A (MINOLTA CO LTD), 14 September 2000 (2000-09-14) abstract	1,9,17
	----- -/-- -----	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *B* document member of the same patent family

Date of the actual completion of the international search

16 June 2004

Date of mailing of the international search report

12.11.2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Bequet, T

INTERNATIONAL SEARCH REPORT

Inter Application No
PCT, 2004/001364

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 3 447 854 A (MINTER ROBERT L) 3 June 1969 (1969-06-03) cited in the application column 2, line 3 - line 8 -----</p>	10

INTERNATIONAL SEARCH REPORT

onal application No.
CT/GB2004/001364

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-13, 17-20

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13, 17-20

Focalisation

2. claims: 14-16

tracking

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB2004/001364

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4799763	A	24-01-1989	NONE	
US 2003025996	A1	06-02-2003	NONE	
JP 2000249975	A	14-09-2000	NONE	
US 3447854	A	03-06-1969	NONE	